

XVI Project Listings by Organization

3M

VII.A.2	Advanced MEAs for Enhanced Operating Conditions.....	730
VII.B.7	MEA and Stack Durability for PEM Fuel Cells.....	784
VII.C.9	Novel Approach to Non-Precious Metal Catalysts.....	854

Advanced Engineering Solutions

VII.G.7	Application of Advanced Computer-Aided Engineering (CAE) Methods for Quality and Durability of Fuel Cell Components.....	980
---------	--	-----

Advanced Fluid Technologies, Inc.

XI.10	Complex Coolant Fluid for PEM Fuel Cell Systems	1336
-------	---	------

Advanced Technology Corporation

V.A.3	Materials Solutions for Hydrogen Delivery in Pipelines.....	415
-------	---	-----

AeroVironment Corporation

IV.H.5	Alkaline, High-Pressure Electrolysis.....	348
VIII.A.6	Fuel Cell Powered Front-End Loader Mining Vehicle	1159

Air Liquide

V.F.2	Hydrogen Delivery Infrastructure Options Analysis.....	447
-------	--	-----

Air Products and Chemicals, Inc.

III.13	Analysis of the Hydrogen Production and Delivery Infrastructure as a Complex Adaptive System	68
IV.A.2	Development of a Turnkey Hydrogen Fueling Station	81
IV.A.11	Ceramic Membrane Reactor Systems for Converting Natural Gas to Hydrogen and Synthesis Gas (ITM Syngas).....	124
IV.H.7	Hydrogen Generation From Electrolysis.....	357
V.B.1	Reversible Liquid Carriers for an Integrated Production, Storage and Delivery of Hydrogen	425
V.G.1	Existing Natural Gas Pipeline Materials and Associated Operational Characteristics	449
VI.B.1	Low Cost, Off-Board Regeneration of Sodium Borohydride.....	531
VI.B.3	Design and Development of New Carbon-Based Sorbent Systems for an Effective Containment of Hydrogen	537
VI.C.1a	Carbon-Based Hydrogen Storage CoE, Air Products and Chemicals, Inc.....	588
VIII.C.2	Novel Compression and Fueling Apparatus to Meet Hydrogen Vehicle Range Requirements	1190
VIII.C.4	California Hydrogen Infrastructure Project.....	1198
VIII.D.1	Research and Development of a PEM Fuel Cell, Hydrogen Reformer, and Vehicle Refueling Facility	1201
VIII.D.2	Validation of an Integrated System for a Hydrogen-Fueled Power Park.....	1205

XVI Project Listings by Organization (Continued)

Aker Industries, Inc.

- IV.A.3 A Reversible Planar Solid Oxide Fuel-Fed Electrolysis Cell and Solid Oxide Fuel Cell for Hydrogen and Electricity Production Operating on Natural Gas/Biogas86

Alameda Contra Costa Transit

- VIII.A.3 Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (Chevron Technology Ventures).....1151

Albany NanoTech

- VII.B.5 Development of Polybenzimidazole-Based, High-Temperature Membrane and Electrode Assemblies for Stationary Applications771

Albemarle Corp

- VI.A.4 Complex Hydride Compounds with Enhanced Hydrogen Storage Capacity479

Alfred University

- VI.D.8 A Radically New Method for Hydrogen Storage in Hollow Glass Microspheres650

Altair Nanomaterials, Inc.

- IV.H.11 Hydrogen Filling Station FY 2005 Progress Report.....370

American National Standards Institute

- IX.2 Hydrogen Codes and Standards1255

American Society of Mechanical Engineers

- IX.2 Hydrogen Codes and Standards1255

Amonix, Inc.

- XI.12 A High Efficiency PV to Hydrogen Energy System (Phase II Project)1338

Analytic Power, LLC

- XI.2 Electrochemical Hydrogen Compressor (Phase I Project)1330

Andersen Creative

- X.7 Education Materials: Hydrogen Program Information Kit.....1309

Archer Daniels Midland Company

- IV.A.5 Hydrogen Generation from Biomass-Derived Carbohydrates via the Aqueous-Phase Reforming (APR) Process96

Argonne National Laboratory

- III.12 Updated Well-to-Wheel Analysis of Energy and Emission Impacts of Fuel-Cell Vehicles64
 IV.A.14 High-Pressure Distributed Ethanol Reforming.....136
 IV.C.7 Development of Mixed-Conducting Dense Ceramic Membranes for Hydrogen Separation193

XVI Project Listings by Organization (Continued)

Argonne National Laboratory (Continued)

IV.G.3	High-Temperature Thermochemical Processes.....	301
V.C.1	Hydrogen Screw Compressor.....	427
V.F.1	Hydrogen Delivery Analysis.....	443
VI.F.3	System-Level Analysis of Hydrogen Storage Options.....	676
VII.B.2	High-Temperature Polymer Membranes.....	757
VII.C.6	Cathode Electrocatalysis: Platinum Stability and Non-Platinum Electrocatalysts.....	838
VII.F.1	Water-Gas Shift Catalysis.....	901
VII.F.2	Catalysts for Autothermal Reforming.....	906
VII.F.5	Fuel Processing R&D.....	921
VII.H.7	Fuel Cell Systems Analysis.....	1014
VII.I.7	Fuel Cell Testing at Argonne National Laboratory.....	1060
VII.K.2	Bipolar Plate-Supported Solid Oxide Fuel Cell "TuffCell".....	1087
X.7	Education Materials: Hydrogen Program Information Kit.....	1309

Arizona Machine and Fabrication

VIII.B.3	Hydrogen Power Park Business Opportunities Concept Project.....	1180
----------	---	------

Arizona Public Service

VIII.B.3	Hydrogen Power Park Business Opportunities Concept Project.....	1180
----------	---	------

Arizona State University

IV.C.3	Single Membrane Reactor Configuration for Separation of Hydrogen, Carbon Dioxide, and Hydrogen Sulfide.....	181
IV.F.9	Combinatorial Development of Water Splitting Catalysts Based on the Oxygen Evolving Complex of Photosystem II.....	276

Arkema Chemicals

VII.B.4	Development of a Low-Cost, Durable Membrane and Membrane Electrode Assembly for Stationary and Mobile Fuel Cell Application.....	767
---------	--	-----

ASME

V.A.3	Materials Solutions for Hydrogen Delivery in Pipelines.....	415
-------	---	-----

Aspen Group

IV.B.2	Robust Low-Cost Water-Gas-Shift Membrane Reactor for High-Purity Hydrogen Production from Coal-Derived Syngas.....	148
--------	--	-----

ATK/Thiokol

VI.B.5	Development of Regenerable High Capacity Boron Nitrogen Hydrides as Hydrogen Storage Materials.....	577
--------	---	-----

XVI Project Listings by Organization (Continued)

ATMI, Inc.

VII.H.5	Development of Sensors for Automotive Fuel Cell Systems	1005
---------	---	------

Avalence, LLC

XI.13	High-Efficiency, Ultra-High Pressure Electrolysis with Direct Linkage to Photovoltaic Arrays (Phase II Project)	1339
-------	---	------

Ballard

VII.C.8	Development of Transition Metal/Chalcogen Based Cathode Catalysts for PEM Fuel Cells	848
---------	--	-----

Battelle

V.B.1	Reversible Liquid Carriers for an Integrated Production, Storage and Delivery of Hydrogen	425
VII.G.3	Economic Analysis of Stationary PEMFC Systems	961
VIII.F.1	Controlled Hydrogen Fleet and Infrastructure Analysis	1227

BOC Group, Inc.

IV.A.7	Integrated Hydrogen Production, Purification, and Compression System	106
--------	--	-----

Boothroyd-Dewhurst Inc

IV.A.10	Low Cost Hydrogen Production Platform (LCHPP)	117
---------	---	-----

Boston University

VI.B.2	Chemical Hydride Slurry for Hydrogen Production and Storage	534
--------	---	-----

Bowling Green State University

IV.F.10	Production of Hydrogen for Clean and Renewable Sources of Energy for Fuel Cell Vehicles	278
---------	---	-----

Boyle & Associates

VIII.B.3	Hydrogen Power Park Business Opportunities Concept Project	1180
----------	--	------

BP America

VIII.A.1	Hydrogen to the Highways (DaimlerChrysler)	1143
VIII.A.2	Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (Ford Motor Company)	1147

Breakthrough Technologies Institute

X.8	Education Materials: Understanding the Hydrogen Economy	1312
-----	---	------

Brookhaven National Laboratory

III.9	Impact of Hydrogen Production on U.S. Energy Markets	58
VI.A.5a	Metal Hydride CoE, Brookhaven National Laboratory (BNL)	491
VII.C.4	Low Pt Loading Fuel Cell Electrocatalysts	828

XVI Project Listings by Organization (Continued)

C3 International, LLC

V.A.3	Materials Solutions for Hydrogen Delivery in Pipelines.....	415
-------	---	-----

Cabot Superior Micropowders

VII.F.4	Development of a 50kW Fuel Processor for Stationary Fuel Cell Applications Using Revolutionary Materials for Absorption-Enhanced Natural Gas Reforming.....	916
---------	---	-----

California Institute of Technology

IV.F.5	Solar Water Splitting: Photocatalyst Materials Discovery and Systems Development	268
VI.A.5b	Metal Hydride CoE, California Institute of Technology.....	493
VI.C.1b	Carbon-Based Hydrogen Storage CoE, California Institute of Technology	590

CANMET

VIII.A.6	Fuel Cell Powered Front-End Loader Mining Vehicle	1159
----------	---	------

Carnegie Institute

VI.D.3	Hydrogen Storage in Novel Molecular Materials.....	638
--------	--	-----

Case Western Reserve University

VII.A.2	Advanced MEAs for Enhanced Operating Conditions.....	730
VII.B.1	High-Temperature Membranes.....	753
VII.B.7	MEA and Stack Durability for PEM Fuel Cells.....	784
VII.C.2	Novel Non-Precious Metal Catalysts for PEMFC: Catalyst Selection through Molecular Modeling and Durability Studies.....	816
VII.C.8	Development of Transition Metal/Chalcogen Based Cathode Catalysts for PEM Fuel Cells.....	848

Catalytica

VII.F.8	Plate-Based Fuel Processing System.....	939
---------	---	-----

Caterpillar Inc.

VIII.A.6	Fuel Cell Powered Front-End Loader Mining Vehicle	1159
----------	---	------

Center for Technology Commercialization

IV.H.1	Low-Cost, High-Pressure Hydrogen Generator	329
--------	--	-----

Ceralink

VII.E.2	Platinum Group Metal Recycling Technology Development	895
---------	---	-----

Ceramatec, Inc.

IV.A.11	Ceramic Membrane Reactor Systems for Converting Natural Gas to Hydrogen and Synthesis Gas (ITM Syngas).....	124
IV.G.1	High-Temperature Electrolysis.....	291
IV.G.4	High Temperature Heat Exchanger Project.....	306
IV.H.10	Large Area Cell for Hybrid Hydrogen Co-Generation Process	367

XVI Project Listings by Organization (Continued)

Chevron

IV.A.11	Ceramic Membrane Reactor Systems for Converting Natural Gas to Hydrogen and Synthesis Gas (ITM Syngas)	124
---------	--	-----

Chevron Technology Ventures

III.8	Hydrogen Production Infrastructure Options Analysis	56
V.F.2	Hydrogen Delivery Infrastructure Options Analysis	447
VII.F.4	Development of a 50kW Fuel Processor for Stationary Fuel Cell Applications Using Revolutionary Materials for Absorption-Enhanced Natural Gas Reforming	916
VIII.A.3	Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (Chevron Technology Ventures)	1151

City of Chattanooga

VIII.D.3	Chattanooga Fuel Cell Demonstration Project	1209
----------	---	------

City of Las Vegas

VIII.D.1	Research and Development of a PEM Fuel Cell, Hydrogen Reformer, and Vehicle Refueling Facility	1201
----------	--	------

Clark Atlanta University

VIII.E.1	Hydrogen from Biomass for Urban Transportation.....	1215
----------	---	------

Clearfuels Technology

VIII.B.1	Hawaii Hydrogen Center for Development and Deployment of Distributed Energy Systems	1167
----------	---	------

Cleveland State University

VI.D.1	Sub-Nanostructured Non-Transition Metal Complex Grids for Hydrogen Storage.....	629
--------	---	-----

Collier Technologies

VIII.A.5	Hydrogen and Natural Gas Blends: Converting Light- and Heavy-Duty Vehicles.....	1158
VIII.B.3	Hydrogen Power Park Business Opportunities Concept Project.....	1180

Colorado School of Mines

IV.B.6	Cost-Effective Method for Producing Self-Supporting Pd Alloy Membrane for Use in the Efficient Production of Coal-derived Hydrogen.....	158
VII.A.2	Advanced MEAs for Enhanced Operating Conditions.....	730

Columbia Gas of Kentucky

V.A.3	Materials Solutions for Hydrogen Delivery in Pipelines.....	415
-------	---	-----

Compressed Gas Association

IX.2	Hydrogen Codes and Standards.....	1255
------	-----------------------------------	------

XVI Project Listings by Organization (Continued)

Concurrent Technologies Corp.

V.G.1 Existing Natural Gas Pipeline Materials and Associated Operational Characteristics449

CoorsTek

IV.B.7 Advanced Hydrogen Transport Membranes for Vision 21 Fossil Fuel Plants.....162

CSA America

IX.2 Hydrogen Codes and Standards.....1255

Cummins

VII.K.10 Diesel Fueled SOFC for Class 7/Class 8 On-Highway Truck Auxiliary Power1134

DaimlerChrysler

VIII.A.1 Hydrogen to the Highways (DaimlerChrysler)1143

DaimlerChrysler AG

VIII.A.1 Hydrogen to the Highways (DaimlerChrysler)1143

Dalhousie University

VII.A.2 Advanced MEAs for Enhanced Operating Conditions.....730

VII.C.9 Novel Approach to Non-Precious Metal Catalysts.....854

De Nora

VII.A.1 Integrated Manufacturing for Advanced Membrane Electrode Assemblies723

Delaware County Electric Cooperative

VII.G.4 Residential Fuel Cell Demonstration by the Delaware County Electric Cooperative.....968

Delaware State University

VII.E.1 Platinum Recycling Technology Development.....889

Delphi

VII.K.6 Solid Oxide Fuel Cell Development for Auxiliary Power in Heavy-Duty Vehicle Applications.....1110

Delta Diversified Electric

VIII.B.3 Hydrogen Power Park Business Opportunities Concept Project.....1180

Directed Technologies, Inc.

III.8 Hydrogen Production Infrastructure Options Analysis56

Diversified Manufacturing Inc.

IV.A.10 Low Cost Hydrogen Production Platform (LCHPP).....117

Donaldson Corporation

VII.K.9 Research and Development for Off-Road Fuel Cell Applications1129

XVI Project Listings by Organization (Continued)

Drexel University

VI.C.2 Carbide-Derived Carbons with Tunable Porosity Optimized for Hydrogen Storage.....	620
--	-----

DTE Energy

VIII.A.1 Hydrogen to the Highways (DaimlerChrysler).....	1143
VIII.B.2 DTE Energy Hydrogen Technology Park.....	1175

Duke University

VI.C.1c Carbon-Based Hydrogen Storage CoE, Duke University.....	592
---	-----

Dupont

VII.B.3 Enabling Commercial PEM Fuel Cells with Breakthrough Lifetime Improvements.....	761
VII.C.5 Development of High-Performance, Low-Pt Cathodes Containing New Catalysts and Layer Structure.....	833
VII.E.1 Platinum Recycling Technology Development.....	889

Duquesne University

IV.F.8 Photoelectrochemical Hydrogen Production.....	274
--	-----

Eastman Chemical

IV.B.6 Cost-Effective Method for Producing Self-Supporting Pd Alloy Membrane for Use in the Efficient Production of Coal-derived Hydrogen.....	158
---	-----

Edenspace Systems Corporation

XI.11 Cellulose Production and Increased Biomass in Multifunction Crop Plants (STTR Phase II Project).....	1338
---	------

EDO Fiber Science

V.G.1 Existing Natural Gas Pipeline Materials and Associated Operational Characteristics.....	449
---	-----

Electricore, Inc.

VII.K.6 Solid Oxide Fuel Cell Development for Auxiliary Power in Heavy-Duty Vehicle Applications.....	1110
--	------

Electrolytica, Inc.

VI.B.4g Chemical Hydrogen Storage CoE, Rohm and Haas.....	564
---	-----

Ellis Optical Technologies

VII.H.2 Fiber Optic Temperature Sensors for PEM Fuel Cells.....	989
---	-----

Eltron Research Inc.

IV.A.11 Ceramic Membrane Reactor Systems for Converting Natural Gas to Hydrogen and Synthesis Gas (ITM Syngas).....	124
IV.B.7 Advanced Hydrogen Transport Membranes for Vision 21 Fossil Fuel Plants.....	162

XVI Project Listings by Organization (Continued)

Emprise Corporation

VII.H.4 Development of a Thermal and Water Management System for PEM Fuel Cells.....1000

EMTEC

IV.F.11 Developing Improved Materials to Support the Hydrogen Economy281

Energy & Environmental Analysis

III.9 Impact of Hydrogen Production on U.S. Energy Markets58

X.8 Education Materials: Understanding the Hydrogen Economy1312

Energy Conversion Devices, Inc.

VI.F.1 Standardized Testing Program for Emergent Chemical Hydride and Carbon Storage Technologies665

Energy CS

VIII.B.3 Hydrogen Power Park Business Opportunities Concept Project.....1180

Engelhard

VII.E.2 Platinum Group Metal Recycling Technology Development895

Entegris

VII.B.5 Development of Polybenzimidazole-Based, High-Temperature Membrane and Electrode Assemblies for Stationary Applications771

Enviro-Tech Enterprises Inc.

VIII.E.1 Hydrogen from Biomass for Urban Transportation1215

EPC, Inc.

IV.H.3 Renewable Electrolysis Integrated Systems Development and Testing.....340

ETEC

VIII.B.3 Hydrogen Power Park Business Opportunities Concept Project.....1180

EVERmont

IV.H.4 EVERmont Hydrogen Electrolyzer Project.....345

Farasis Energy, Inc.

XI.1 Novel, High Capacity Hydrogen Storage System (Phase I Project).....1330

FEA Technologies

VI.E.1 Low Cost, High Efficiency, High Pressure Hydrogen Storage653

Flextronics

VII.K.1 Direct Methanol Fuel Cell Prototype Demonstration for Consumer Electronics Applications.....1081

XVI Project Listings by Organization (Continued)

Ford Motor Co

VI.A.3	Discovery of Novel Complex Metal Hydrides for Hydrogen Storage through Molecular Modeling and Combinatorial Methods	473
VIII.A.2	Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (Ford Motor Company).....	1147

FuelSell Technologies

VI.G.4	Solid State Hydrogen Storage Reduced Infrastructure Requirement Chemistry/Hardware Optimization Study	715
--------	---	-----

Functional Coating Technologies, LLC

IV.H.8	System Design and New Materials for Reversible Solid-Oxide, High-Temperature Steam Electrolysis	361
--------	---	-----

Gas Equipment Engineering Corporation

V.E.1	Combined Reverse-Brayton Joule Thompson Hydrogen Liquefaction Cycle	437
-------	---	-----

Gas Technology Institute

V.F.2	Hydrogen Delivery Infrastructure Options Analysis	447
-------	---	-----

GE Energy

IV.A.1	Autothermal Cyclic Reforming Based Hydrogen Generating and Dispensing System	77
--------	--	----

GE Global Research

IV.A.12	Integrated Short Contact Time Hydrogen Generator.....	127
IV.B.4	Integrated High-Temperature Coal-to-Hydrogen System with CO ₂ Separation.....	153
IV.F.5	Solar Water Splitting: Photocatalyst Materials Discovery and Systems Development	268
IV.H.2	New York State Hi-Way Initiative	334
IV.H.8	System Design and New Materials for Reversible Solid-Oxide, High-Temperature Steam Electrolysis	361
VI.A.5c	Metal Hydride CoE, General Electric Metal Hydride CoE, Company.....	495

General Atomics Corporation

IV.G.4	High Temperature Heat Exchanger Project.....	306
IV.I.1	Solar Hydrogen Generation Research	377

General Motors

VIII.A.4	Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (General Motors)	1155
----------	--	------

Georgia Institute of Technology

VII.B.4	Development of a Low-Cost, Durable Membrane and Membrane Electrode Assembly for Stationary and Mobile Fuel Cell Application	767
---------	---	-----

XVI Project Listings by Organization (Continued)

Georgia Institute of Technology (Continued)

VIII.E.1 Hydrogen from Biomass for Urban Transportation	1215
---	------

Giner, Inc.

IV.H.1 Low-Cost, High-Pressure Hydrogen Generator	329
XI.6 Dimensionally Stable High Performance Membrane (Phase I Project)	1332
XI.9 Novel, Low-Cost Solid Membrane Water Electrolyzer (Phase II Project)	1334

Gas Technology Institute

IV.A.4 Development of a Natural Gas to Hydrogen Fuel Station	91
IV.B.8 A Novel Membrane Reactor for Hydrogen Production from Coal	166
IV.C.3 Single Membrane Reactor Configuration for Separation of Hydrogen, Carbon Dioxide, and Hydrogen Sulfide	181
VI.C.3 Electron Charged Graphite-based Hydrogen Storage Material	624
VI.E.3 Analysis and Development of Cost-Effective and Reliable H ₂ Off-Board Hydrogen Storage Technology for Refueling Sites	662

H₂Gen Innovations, Inc.

III.8 Hydrogen Production Infrastructure Options Analysis	56
IV.A.2 Development of a Turnkey Hydrogen Fueling Station	81
IV.A.9 Low-Cost Hydrogen Distributed Production Systems	114

H2Nation

X.8 Education Materials: Understanding the Hydrogen Economy	1312
---	------

Hatch

VIII.A.6 Fuel Cell Powered Front-End Loader Mining Vehicle	1159
--	------

Hatch Technology LLC

VI.B.2 Chemical Hydride Slurry for Hydrogen Production and Storage	534
--	-----

Hawaii Hydrogen Carriers

VI.A.3 Discovery of Novel Complex Metal Hydrides for Hydrogen Storage through Molecular Modeling and Combinatorial Methods	473
---	-----

Hawaii Natural Energy Inst.

VIII.B.1 Hawaii Hydrogen Center for Development and Deployment of Distributed Energy Systems	1167
---	------

HERA Hydrogen Storage Systems

VI.B.2 Chemical Hydride Slurry for Hydrogen Production and Storage	534
VIII.A.6 Fuel Cell Powered Front-End Loader Mining Vehicle	1159

XVI Project Listings by Organization (Continued)

HERA USA

IV.A.7 Integrated Hydrogen Production, Purification, and Compression System106

Hoeganaes

IV.H.10 Large Area Cell for Hybrid Hydrogen Co-Generation Process.....367

Honeywell

VII.H.1 Cost and Performance Enhancements for a PEM Fuel Cell System Turbocompressor985

VII.H.4 Development of a Thermal and Water Management System for PEM Fuel Cells.....1000

VII.H.6 Hydrogen Program Sensor Development1011

Houston Advanced Research Center

X.11 Shared Technology Program1324

Hughes Research Labs

VI.A.5d Metal Hydride CoE, HRL Laboratories, LLC498

Humboldt State University

X.5 Hydrogen Technology and Energy Curriculum (HyTEC)1303

Hy9 Corporation

XI.4 Ultra-High Productivity Metal Membranes for Hydrogen Production Applications
(STTR Phase I Project)1331

Hydrogen Components Inc.

VI.A.2 High Density Hydrogen Storage System Demonstration Using NaAlH₄ Based
Complex Compound Hydrides467

Hydrogen Solar LLC

IV.H.11 Hydrogen Filling Station FY 2005 Progress Report.....370

HyRadix/SunLine

VIII.C.3 Auto-Thermal Reforming Based Refueling Station at SunLine Services1194

Hyundai Motor Company

VIII.A.3 Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation
Project (Chevron Technology Ventures)1151

Hyundai-KIA America Technical Center Inc.

VIII.A.3 Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project
(Chevron Technology Ventures)1151

XVI Project Listings by Organization (Continued)

Idaho National Laboratory

IV.G.1	High-Temperature Electrolysis.....	291
IV.G.2	Sulfur-Iodine Thermochemical Cycle	296
IV.G.5	Nuclear Hydrogen Initiative System Interface and Support Systems	313
IV.H.10	Large Area Cell for Hybrid Hydrogen Co-Generation Process	367

IdaTech

IV.B.6	Cost-Effective Method for Producing Self-Supporting Pd Alloy Membrane for Use in the Efficient Production of Coal-derived Hydrogen	158
VII.G.6	An Advanced Buildings Proton Exchange Membrane (PEM) Fuel Cell System	975
VII.K.9	Research and Development for Off-Road Fuel Cell Applications	1129

Illinois Institute of Technology

VII.H.5	Development of Sensors for Automotive Fuel Cell Systems	1005
---------	---	------

Innochem, Inc.

VI.B.4g	Chemical Hydrogen Storage CoE, Rohm and Haas	564
---------	--	-----

Institute of Basic Biological Problems

IV.E.2	Biological Systems for Hydrogen Photoproduction	216
--------	---	-----

Institute of Electro-Physics

IV.H.9	Modular System for Hydrogen Generation and Oxygen Recovery	363
--------	--	-----

Institutt for Energiteknikk

VI.A.4	Complex Hydride Compounds with Enhanced Hydrogen Storage Capacity	479
--------	---	-----

Intematix Corporation

IV.F.1	High-Efficiency Generation of Hydrogen Using Solar Thermochemical Splitting of Water - UNLV: Photoelectrochemical Hydrogen Production Subtask at UH	243
IV.F.8	Photoelectrochemical Hydrogen Production	274
VI.A.5e	Metal Hydride CoE, Intematix Corporation	500
VI.B.4d	Chemical Hydrogen Storage CoE, Intematix Corporation	558

International Code Council

IX.2	Hydrogen Codes and Standards.....	1255
------	-----------------------------------	------

International Truck & Engine Corp,

VII.K.10	Diesel Fueled SOFC for Class 7/Class 8 On-Highway Truck Auxiliary Power	1134
----------	---	------

Ion America

VIII.D.3	Chattanooga Fuel Cell Demonstration Project	1209
----------	---	------

Ion Power, Inc.

VII.E.1	Platinum Recycling Technology Development	889
---------	---	-----

XVI Project Listings by Organization (Continued)

ITN Energy Systems, Inc.

XI.5	Nano-Fabricated Hydrogen Separation Membranes (Phase I Project).....	1332
------	--	------

J. Craig Venter Institute

IV.E.6	Hydrogen from Water in a Novel Recombinant Oxygen-Tolerant Cyanobacteria System	241
--------	---	-----

Jet Propulsion Laboratory

VI.A.5f	Metal Hydride CoE, Jet Propulsion Laboratory (JPL)	501
VII.K.4	Advanced Catalysts with Reduced Noble Metal Content for Fuel Cells.....	1097

Johnson Matthey Fuel Cells, Inc.

VII.B.4	Development of a Low-Cost, Durable Membrane and Membrane Electrode Assembly for Stationary and Mobile Fuel Cell Application	767
---------	--	-----

Joseph Hupp

VI.D.7	New Concepts for Optimized Hydrogen Storage in Metal-Organic Frameworks	648
--------	---	-----

Juergen Eckert

VI.D.7	New Concepts for Optimized Hydrogen Storage in Metal-Organic Frameworks	648
--------	---	-----

Kelvin Hecht

IX.2	Hydrogen Codes and Standards.....	1255
------	-----------------------------------	------

Kia Motors Corporation

VIII.A.3	Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (Chevron Technology Ventures).....	1151
----------	---	------

Kinetics

VIII.B.3	Hydrogen Power Park Business Opportunities Concept Project.....	1180
----------	---	------

Lansing Community College

X.3	Hydrogen/Alternative Energy Center	1296
-----	--	------

Lawrence Berkeley National Laboratory

VII.C.1	New Electrocatalysts for Fuel Cells	811
VII.I.8	Investigating Failure in Polymer-Electrolyte Fuel Cells	1062
V.D.1	Inexpensive Delivery of Compressed Hydrogen with Advanced Vessel Technology.....	431
VI.C.1d	Carbon-Based Hydrogen Storage CoE, Lawrence Livermore National Laboratory	594
VI.E.2	Advanced Concepts for Containment of Hydrogen and Hydrogen Storage Materials	657
VII.I.10	Electrochemical Sensors for PEMFC Vehicles	1072

Lehigh University

IV.B.3	Novel Sorption-Enhanced Reaction Process for Simultaneous Production of Carbon Dioxide and Hydrogen from Synthesis Gas Produced by Coal Gasification	151
XI.10	Complex Coolant Fluid for PEM Fuel Cell Systems.....	1336

XVI Project Listings by Organization (Continued)

Longitude 122 West, Inc.

IX.6	Evaluation of Integrated Hydrogen Systems	1282
------	---	------

Los Alamos National Laboratory

VI.B.4	DOE Chemical Hydrogen Storage Center of Excellence	540
VI.B.4a	Chemical Hydrogen Storage CoE, Los Alamos National Laboratory.....	549
VII.A.4	Electrocatalyst Supports and Electrode Structures	746
VII.B.9	Non-Nafion, Membrane Electrode Assemblies	794
VII.C.7	Non-Precious Metal Catalysts	842
VII.I.3	PEM Fuel Cell Durability.....	1039
VII.I.4	Effect of Fuel and Air Impurities on PEM Fuel Cell Performance	1046
VII.I.5	Component Benchmarking: Establishing a Standardized Single Cell Testing Procedure through Industry Participation, Consensus and Experimentation	1052
VII.I.6	Fundamental Science for Performance, Cost and Durability	1056
VII.J.1	Sub-Freezing Fuel Cell Effects.....	1077
VII.K.8	Direct Methanol Fuel Cells.....	1121
IX.4	International Standards and Regulations	1273
X.6	H ₂ Educate! : Hydrogen Education for Middle Schools	1306

M.R.S. Enterprises, LLC

IX.7	Management of International Energy Agency (IEA) Hydrogen Implementing Agreement (HIA) Secretariat.....	1284
------	---	------

Mack Powertrain

VII.K.6	Solid Oxide Fuel Cell Development for Auxiliary Power in Heavy-Duty Vehicle Applications.....	1110
---------	--	------

Massachusetts Institute of Technology

IV.G.4	High Temperature Heat Exchanger Project.....	306
--------	--	-----

Materials and Systems Research Inc.

IV.A.3	A Reversible Planar Solid Oxide Fuel-Fed Electrolysis Cell and Solid Oxide Fuel Cell for Hydrogen and Electricity Production Operating on Natural Gas/Biogas	86
--------	---	----

Mechanology, LLC

VII.H.3	Development and Testing of a Toroidal Intersecting Vane Machine (TIVM)	
	Air Management System	995

Media & Process Technology, Inc.

IV.C.6	Hydrogen Production via Commercially Ready Inorganic Membrane Reactor.....	190
--------	--	-----

Membrane Reactor Technologies

IV.A.7	Integrated Hydrogen Production, Purification, and Compression System	106
--------	--	-----

XVI Project Listings by Organization (Continued)

Membrane Technology and Research, Inc.

XI.14	Hydrogen Recovery and Carbon Dioxide Separation In Steam Methane Reformers (Phase II Project)	1339
-------	--	------

Mercedes Benz USA LLC

VIII.A.1	Hydrogen to the Highways (DaimlerChrysler).....	1143
----------	---	------

Metallurgical Viability, Inc.

VI.B.2	Chemical Hydride Slurry for Hydrogen Production and Storage.....	534
--------	--	-----

Methanol Foundation

VII.K.1	Direct Methanol Fuel Cell Prototype Demonstration for Consumer Electronics Applications	1081
---------	--	------

Michigan Technological University

VI.D.5	Metal Perhydrides for Hydrogen Storage	644
--------	--	-----

Micro-Materials, Inc.

VII.H.2	Fiber Optic Temperature Sensors for PEM Fuel Cells	989
---------	--	-----

Midwest Optoelectronics

IV.F.6	Critical Research for Cost-Effective Photoelectrochemical Production of Hydrogen	270
--------	--	-----

Millennium Cell

VI.B.1	Low Cost, Off-Board Regeneration of Sodium Borohydride.....	531
VI.B.4e	Chemical Hydrogen Storage CoE, Millennium Cell Inc.	560

Modine Manufacturing

VIII.A.6	Fuel Cell Powered Front-End Loader Mining Vehicle.....	1159
----------	--	------

Mohawk Innovative Technology, Inc.

XI.3	Oil-Free Hydrogen Compressor (Phase I Project).....	1331
------	---	------

Montana State University

IV.F.7	Bioinspired Composite Nanomaterials for Photocatalytic Hydrogen Production	272
VII.B.6	Montana PEM Membrane Degradation Study	777

MoSci Corporation

VI.D.8	A Radically New Method for Hydrogen Storage in Hollow Glass Microspheres	650
--------	--	-----

MTI MicroFuel Cells

VII.K.1	Direct Methanol Fuel Cell Prototype Demonstration for Consumer Electronics Applications	1081
---------	--	------

XVI Project Listings by Organization (Continued)

MVSystems, Inc.

IV.F.1	High-Efficiency Generation of Hydrogen Using Solar Thermochemical Splitting of Water - UNLV: Photoelectrochemical Hydrogen Production Subtask at UH	243
IV.F.8	Photoelectrochemical Hydrogen Production	274
VIII.B.1	Hawaii Hydrogen Center for Development and Deployment of Distributed Energy Systems	1167

NanoSonic, Inc.

XI.7	Economical High Performance Thermoplastic Composite Bipolar Plates (STTR Phase I Project)	1333
------	---	------

National Energy Technology Laboratory

IV.C.5	Hydrogen Separation	186
--------	---------------------------	-----

National Fire Protection Association

IX.2	Hydrogen Codes and Standards	1255
------	------------------------------------	------

National Fuel Cell Research Center

VII.F.8	Plate-Based Fuel Processing System	939
---------	--	-----

National Hydrogen Association

VI.F.1	Standardized Testing Program for Emergent Chemical Hydride and Carbon Storage Technologies	665
IX.2	Hydrogen Codes and Standards	1255
X.9	Hydrogen Education and Outreach	1315

National Institute of Standards and Technology

VI.A.5g	Metal Hydride CoE, National Institute of Standards & Technology (NIST)	502
VI.C.1e	Carbon-Based Hydrogen Storage CoE, National Institute of Standards and Technology	595
VII.I.1	Neutron Imaging Study of the Water Transport Mechanism in a Working Fuel Cell	1029

National Renewable Energy Laboratory

III.2	Moving Toward Consistent Analysis in the HFC&IT Program: H2A	26
III.4	Energy Systems Analysis: Hydrogen Deployment System Modeling	35
III.11	Macro-System Model	62
IV.A.13	Distributed Bio-Oil Reforming	129
IV.E.2	Biological Systems for Hydrogen Photoproduction	216
IV.E.4	Fermentation Approaches to Hydrogen Production	230
IV.E.5	Hydrogen Reactor Development and Design for Photofermentation and Photolytic Processes	236
IV.F.2	Photoelectrochemical Systems for H ₂ Production	250
IV.H.3	Renewable Electrolysis Integrated Systems Development and Testing	340

XVI Project Listings by Organization (Continued)

National Renewable Energy Laboratory (Continued)

V.F.2	Hydrogen Delivery Infrastructure Options Analysis	447
VI.C.1	DOE Carbon-Based Hydrogen Storage Center of Excellence	581
VI.C.1f	Carbon-Based Hydrogen Storage CoE, National Renewable Energy Laboratory	597
VII.B.10	Advanced Fuel Cell Membranes Based on Heteropolyacids	799
VII.D.4	Corrosion Protection of Metallic Bipolar Plates for Fuel Cells.....	882
VII.G.7	Application of Advanced Computer-Aided Engineering (CAE) Methods for Quality and Durability of Fuel Cell Components.....	980
VII.H.9	PEM Fuel Cell Freeze and Rapid Startup.....	1024
VIII.F.1	Controlled Hydrogen Fleet and Infrastructure Analysis.....	1227
VIII.F.3	Technology Validation: Fuel Cell Bus Evaluations	1237
VIII.F.4	Hydrogen Infrastructure Transition Analysis	1242
IX.2	Hydrogen Codes and Standards.....	1255

National Center for Manufacturing Sciences

VI.G.3	Advanced Manufacturing Technologies for Hydrogen Energy Systems	709
--------	---	-----

Naval Research Laboratory

IV.A.9	Low-Cost Hydrogen Distributed Production Systems	114
VII.C.3	Low-Platinum Catalysts for Oxygen Reduction at PEMFC Cathodes.....	823

NAVSEA-Carderock

X.11	Shared Technology Program	1324
------	---------------------------------	------

NEED

X.6	H ₂ Educate! : Hydrogen Education for Middle Schools	1306
-----	---	------

New Concepts Research Corporation

V.E.2	Efficient and Inexpensive Liquefier for Hydrogen.....	440
-------	---	-----

New Mexico Institute of Mining and Technology

VIII.B.1	Hawaii Hydrogen Center for Development and Deployment of Distributed Energy Systems	1167
----------	--	------

Nexant Inc.

V.F.2	Hydrogen Delivery Infrastructure Options Analysis.....	447
-------	--	-----

NexTech Materials, LTD

VII.H.5	Development of Sensors for Automotive Fuel Cell Systems	1005
---------	---	------

XVI Project Listings by Organization (Continued)

NextEnergy

VIII.A.1 Hydrogen to the Highways (DaimlerChrysler)	1143
VIII.A.4 Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (General Motors)	1155
VIII.C.1 NextEnergy Microgrid and Hydrogen Fueling Facility	1187

Nicholls State University

X.11 Shared Technology Program	1324
--------------------------------------	------

NORAM Engineering and Constructors

IV.B.7 Advanced Hydrogen Transport Membranes for Vision 21 Fossil Fuel Plants.....	162
--	-----

North Carolina A&T State University

X.10 STAC Hydrogen Learning Centers	1319
---	------

Northeastern University

VII.A.3 Development of High-Temperature Membranes and Improved Cathode Catalysts	739
VII.C.2 Novel Non-Precious Metal Catalysts for PEMFC: Catalyst Selection through Molecular Modeling and Durability Studies.....	816

Northern Arizona University

VI.B.4f Chemical Hydrogen Storage CoE, Northern Arizona University	562
--	-----

Northern Power Systems

IV.H.4 EVermont Hydrogen Electrolyzer Project.....	345
--	-----

Northwestern University

IV.H.8 System Design and New Materials for Reversible Solid-Oxide, High-Temperature Steam Electrolysis	361
---	-----

Nuclear Filter Technology, Inc

IV.E.5 Hydrogen Reactor Development and Design for Photofermentation and Photolytic Processes.....	236
---	-----

Nuvera Fuel Cells

VII.F.7 CHARM - Cost-Effective, High-Efficiency Advanced Reforming Module.....	932
VIII.A.6 Fuel Cell Powered Front-End Loader Mining Vehicle	1159

NuZoo Media, Inc.

X.7 Education Materials: Hydrogen Program Information Kit.....	1309
--	------

Oak Ridge Institute for Science and Education

VI.C.1g Carbon-Based Hydrogen Storage CoE, Oak Ridge National Laboratory	605
--	-----

XVI Project Listings by Organization (Continued)

Oak Ridge National Laboratory

III.3	HyTrans Model Development	30
IV.C.2	Novel High-Temperature Ion Transport Membrane Development	178
IV.C.4	Scale-up of Microporous Inorganic Hydrogen-Separation Membrane	183
IV.E.3	Photobiological H ₂ Production Systems: Creation of Designer Alga for Efficient and Robust Production of H ₂ from Water	225
IV.G.6	Materials for High-Temperature Thermochemical Processes	319
V.A.1	Hydrogen Permeability and Integrity of Hydrogen Transfer Pipelines.....	403
V.A.2	New Materials for Hydrogen Pipelines	408
VI.A.5h	Metal Hydride CoE, Oak Ridge National Laboratory (ORNL)	504
VI.C.1g	Carbon-Based Hydrogen Storage CoE, Oak Ridge National Laboratory	605
VII.D.2	Cost-Effective Surface Modification for Metallic Bipolar Plates	870
VII.F.3	Selective Catalytic Oxidation of Hydrogen Sulfide	911
VII.H.2	Fiber Optic Temperature Sensors for PEM Fuel Cells.....	989
VII.H.8	Graphite-based Thermal Management System Components for Fuel Cell Power Systems	1019
VII.I.2	Microstructural Characterization of Polymer Electrolyte Membrane Fuel Cell (PEMFC) Membrane Electrode Assemblies (MEAs)	1033
X.2	Determine Baseline Knowledge of Hydrogen and Fuel Cells.....	1293

Ohio State

IV.A.15	Investigation of Reaction Networks and Active Sites in Bio-Ethanol Steam Reforming over Co-Based Catalysts.....	141
IV.C.8	Enhanced Hydrogen Production Integration with Carbon Dioxide Separation in a Single-State Reactor	196

Oregon State University

VII.H.2	Fiber Optic Temperature Sensors for PEM Fuel Cells.....	989
---------	---	-----

Oregon Steel Mills

V.A.3	Materials Solutions for Hydrogen Delivery in Pipelines.....	415
-------	---	-----

OSRAM Sylvania

VII.C.10	Tungsten Cathode Catalyst for PEMFC	860
----------	---	-----

OURCO, Inc.

X.9	Hydrogen Education and Outreach.....	1315
-----	--------------------------------------	------

Oxford Performance Materials

VII.B.8	Development of Higher Temperature Membrane and Electrode Assembly for Proton Exchange Membrane Fuel Cell Device	790
---------	---	-----

XVI Project Listings by Organization (Continued)

PACCAR, Inc.

VII.K.6	Solid Oxide Fuel Cell Development for Auxiliary Power in Heavy-Duty Vehicle Applications.....	1110
---------	---	------

Pacific International Center for High Technology Research

VIII.B.1	Hawaii Hydrogen Center for Development and Deployment of Distributed Energy Systems	1167
----------	---	------

Pacific Northwest National Laboratory

III.10	Hydrogen Analysis Support.....	60
IV.A.6	Production of Hydrogen by Biomass Reforming	98
VI.B.4b	Chemical Hydrogen Storage CoE, Pacific Northwest National Laboratory	552
VII.D.3	Development of Low-Cost, Clad Metal Bipolar Plates for PEM Fuel Cells.....	876
VII.F.9	Forecourt Fuel Processing: Micro-Channel Steam Reforming of Natural Gas for Distributed Hydrogen Production.....	945
VII.K.3	Modeling and Control of an SOFC APU.....	1091
IX.5	Hydrogen Safety	1276

Pall Corporation

IV.C.4	Scale-up of Microporous Inorganic Hydrogen-Separation Membrane	183
IV.C.6	Hydrogen Production via Commercially Ready Inorganic Membrane Reactor.....	190

Pdc Machines Inc.

IV.H.5	Alkaline, High-Pressure Electrolysis.....	348
--------	---	-----

Pearson Technologies

VIII.B.1	Hawaii Hydrogen Center for Development and Deployment of Distributed Energy Systems.....	1167
----------	--	------

PEMEAS GmbH

VII.B.5	Development of Polybenzimidazole-Based, High-Temperature Membrane and Electrode Assemblies for Stationary Applications	771
---------	--	-----

Pennsylvania State University

IV.A.2	Development of a Turnkey Hydrogen Fueling Station	81
IV.A.11	Ceramic Membrane Reactor Systems for Converting Natural Gas to Hydrogen and Synthesis Gas (ITM Syngas)	124
V.B.1	Reversible Liquid Carriers for an Integrated Production, Storage and Delivery of Hydrogen.....	425
VI.B.4c	Chemical Hydrogen Storage CoE, Pennsylvania State University	555
VI.C.1h	Carbon-Based Hydrogen Storage CoE, Pennsylvania State University.....	607
XI.10	Complex Coolant Fluid for PEM Fuel Cell Systems	1336

XVI Project Listings by Organization (Continued)

Perma Pure LLC

VII.H.4 Development of a Thermal and Water Management System for PEM Fuel Cells.....1000

Pinnacle West

V.F.2 Hydrogen Delivery Infrastructure Options Analysis.....447

Pleotint LLC

IV.F.7 Bioinspired Composite Nanomaterials for Photocatalytic Hydrogen Production.....272

Plug Power Inc.

VII.B.5 Development of Polybenzimidazole-Based, High-Temperature Membrane and Electrode Assemblies for Stationary Applications.....771

VII.B.7 MEA and Stack Durability for PEM Fuel Cells.....784

VII.G.2 Back-Up/Peak-Shaving Fuel Cell Systems.....956

VIII.D.1 Research and Development of a PEM Fuel Cell, Hydrogen Reformer, and Vehicle Refueling Facility.....1201

Polyfuel, Inc.

VII.K.7 Direct Methanol Fuel Cell Power Supply for All-Day True Wireless Mobile Computing....1116

PoroGen, LLC

VI.C.4 Nanostructured Activated Carbon for Hydrogen Storage.....626

Porvair Corp.

VII.D.1 Scale-Up of Carbon/Carbon Composite Bipolar Plates.....863

Power & Energy Analytic Resources

III.9 Impact of Hydrogen Production on U.S. Energy Markets.....58

Praxair

IV.A.1 Autothermal Cyclic Reforming Based Hydrogen Generating and Dispensing System.....77

IV.A.8 Integrated Ceramic Membrane System for Hydrogen Production.....109

IV.A.10 Low Cost Hydrogen Production Platform (LCHPP).....117

Prometheus Energy Company

V.E.2 Efficient and Inexpensive Liquefier for Hydrogen.....440

Proton Energy Systems, Inc

IV.H.7 Hydrogen Generation From Electrolysis.....357

IV.H.4 Vermont Hydrogen Electrolyzer Project.....345

IV.H.11 Hydrogen Filling Station FY 2005 Progress Report.....370

VI.E.1 Low Cost, High Efficiency, High Pressure Hydrogen Storage.....653

VIII.A.4 Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (General Motors).....1155

XVI Project Listings by Organization (Continued)

QuestAir Technologies Inc.

IV.A.2	Development of a Turnkey Hydrogen Fueling Station	81
--------	---	----

QuesTek, LLC

VI.A.2	High Density Hydrogen Storage System Demonstration Using NaAlH ₄ Based Complex Compound Hydrides.....	467
VI.A.4	Complex Hydride Compounds with Enhanced Hydrogen Storage Capacity.....	479

R&D Dynamics

V.E.1	Combined Reverse-Brayton Joule Thompson Hydrogen Liquefaction Cycle	437
-------	---	-----

Radiance Technologies

VII.G.5	Smart Energy Management and Control for Fuel Cell Based Micro-Grid Connected Neighborhoods	972
---------	--	-----

Randall Snurr

VI.D.7	New Concepts for Optimized Hydrogen Storage in Metal-Organic Frameworks	648
--------	---	-----

RCF, Inc.

III.13	Analysis of the Hydrogen Production and Delivery Infrastructure as a Complex Adaptive System.....	68
--------	---	----

Rensselaer Polytechnic Institute

VII.B.5	Development of Polybenzimidazole-Based, High-Temperature Membrane and Electrode Assemblies for Stationary Applications	771
---------	--	-----

Research Triangle Institute

IV.A.8	Integrated Ceramic Membrane System for Hydrogen Production	109
VI.B.5	Development of Regenerable High Capacity Boron Nitrogen Hydrides as Hydrogen Storage Materials.....	577

Resource Dynamics Corporation

V.G.1	Existing Natural Gas Pipeline Materials and Associated Operational Characteristics	449
-------	--	-----

Rice University

VI.C.1i	Carbon-Based Hydrogen Storage CoE, Rice University.....	609
VI.C.1j	Carbon-Based Hydrogen Storage CoE, Rice University.....	611

Rohm and Haas

VI.B.4g	Chemical Hydrogen Storage CoE, Rohm and Haas	564
---------	--	-----

Romack, Inc

VII.H.2	Fiber Optic Temperature Sensors for PEM Fuel Cells.....	989
---------	---	-----

Ron I. Sims

IX.2	Hydrogen Codes and Standards.....	1255
------	-----------------------------------	------

XVI Project Listings by Organization (Continued)

RTC of Washoe Co.

VIII.E.2 Hydrogen Fuel Project - H ₂ Fuel.....	1221
---	------

Safe Hydrogen

VI.B.2 Chemical Hydride Slurry for Hydrogen Production and Storage.....	534
---	-----

Sandia National Laboratories

IV.C.1 Defect-Free Thin Film Membranes for H ₂ Separation and Isolation	171
IV.H.6 Increasing the Efficiency of the Water Electrolysis Cell.....	353
VI.A.5 DOE Metal Hydride Center of Excellence	487
VI.A.5i Metal Hydride CoE, Sandia National Laboratories	506
VII.B.11 Hydrocarbon Membrane	804
VIII.F.2 Power Parks System Simulation.....	1232
IX.3 Hydrogen Safety, Codes and Standards R&D.....	1261

Savannah River National Laboratory

IV.I.3 Low Temperature Electrolytic Hydrogen Production	392
V.A.4 Evaluation of Natural Gas Pipeline Materials for Hydrogen/Mixed Hydrogen-Natural Gas Service	417
VI.A.4 Complex Hydride Compounds with Enhanced Hydrogen Storage Capacity	479
VI.A.5j Metal Hydride CoE, Savannah River National Laboratory (SRNL).....	514
VI.D.8 A Radically New Method for Hydrogen Storage in Hollow Glass Microspheres	650
VI.G.1 Clean Energy Research.....	683

Schott North America

V.A.3 Materials Solutions for Hydrogen Delivery in Pipelines.....	415
---	-----

Scientific Carbons Inc.

VIII.E.1 Hydrogen from Biomass for Urban Transportation.....	1215
--	------

Secat, Inc.

V.A.3 Materials Solutions for Hydrogen Delivery in Pipelines.....	415
---	-----

Sentech Inc.

III.8 Hydrogen Production Infrastructure Options Analysis	56
VIII.B.1 Hawaii Hydrogen Center for Development and Deployment of Distributed Energy Systems	1167
X.6 H ₂ Educate! : Hydrogen Education for Middle Schools	1306

Shell Hydrogen, LLC

VIII.A.4 Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (General Motors)	1155
--	------

XVI Project Listings by Organization (Continued)

Simplex-Grinnell

VIII.B.3 Hydrogen Power Park Business Opportunities Concept Project.....	1180
--	------

SOFCo-EFS Holdings LLC

IV.A.11 Ceramic Membrane Reactor Systems for Converting Natural Gas to Hydrogen and Synthesis Gas (ITM Syngas)	124
VII.K.10 Diesel Fueled SOFC for Class 7/Class 8 On-Highway Truck Auxiliary Power	1134

South Carolina State University

IV.I.3 Low Temperature Electrolytic Hydrogen Production	392
VI.G.1 Clean Energy Research.....	683

Southern California Edison

VIII.A.3 Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (Chevron Technology Ventures)	1151
--	------

Southwest Research Institute

IV.B.6 Cost-Effective Method for Producing Self-Supporting Pd Alloy Membrane for Use in the Efficient Production of Coal-derived Hydrogen	158
IV.F.8 Photoelectrochemical Hydrogen Production	274
VI.F.1 Standardized Testing Program for Emergent Chemical Hydride and Carbon Storage Technologies.....	665
VIII.A.6 Fuel Cell Powered Front-End Loader Mining Vehicle	1159

Spencer Composites LLC

VI.A.2 High Density Hydrogen Storage System Demonstration Using NaAlH ₄ Based Complex Compound Hydrides.....	467
---	-----

SRI Consulting-Business Intelligence

IV.H.9 Modular System for Hydrogen Generation and Oxygen Recovery	363
---	-----

SRI International

IV.F.4 Discovery of Photocatalysts for Hydrogen Production	263
IV.H.9 Modular System for Hydrogen Generation and Oxygen Recovery	363

SRS

IV.G.7 Hybrid Sulfur Thermochemical Process Development	323
---	-----

STAC

X.10 STAC Hydrogen Learning Centers	1319
---	------

Stanford University

VI.A.5k Metal Hydride CoE, Stanford University	516
--	-----

XVI Project Listings by Organization (Continued)

Startech Environmental

IV.D.1	Startech Hydrogen Production.....	203
--------	-----------------------------------	-----

State of Maryland

VIII.A.4	Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (General Motors)	1155
----------	---	------

State Scientific Research Institute

VI.B.5	Development of Regenerable High Capacity Boron Nitrogen Hydrides as Hydrogen Storage Materials	577
IV.H.2	New York State Hi-Way Initiative	334

State University of New York (SUNY) at Syracuse

VI.C.4	Nanostructured Activated Carbon for Hydrogen Storage	626
--------	--	-----

Strata-G

III.3	HyTrans Model Development	30
-------	---------------------------------	----

Striatius Incorporated

VI.A.3	Discovery of Novel Complex Metal Hydrides for Hydrogen Storage through Molecular Modeling and Combinatorial Methods	473
--------	--	-----

Stuart Energy Systems

VIII.A.6	Fuel Cell Powered Front-End Loader Mining Vehicle.....	1159
----------	--	------

Sud Chemie, Inc.

IV.A.9	Low-Cost Hydrogen Distributed Production Systems	114
IV.B.7	Advanced Hydrogen Transport Membranes for Vision 21 Fossil Fuel Plants.....	162

Suha Yazici

VI.D.1	Sub-Nanostructured Non-Transition Metal Complex Grids for Hydrogen Storage.....	629
--------	---	-----

SunLine Services Group

VIII.C.3	Auto-Thermal Reforming Based Refueling Station at SunLine Services	1194
----------	--	------

Superior Graphite Co.

VI.C.3	Electron Charged Graphite-based Hydrogen Storage Material	624
--------	---	-----

Superior MicroPowders

VII.C.5	Development of High-Performance, Low-Pt Cathodes Containing New Catalysts and Layer Structure	833
---------	--	-----

Teledyne Energy Services

III.8	Hydrogen Production Infrastructure Options Analysis	56
IV.H.5	Alkaline, High-Pressure Electrolysis.....	348

XVI Project Listings by Organization (Continued)

Tellus Institute

III.6	Hydrogen Production in a Greenhouse Gas Constrained Situation.....	44
-------	--	----

The Toro Company

VII.K.9	Research and Development for Off-Road Fuel Cell Applications	1129
---------	--	------

TIAX LLC

III.7	Fuel Choice for Fuel Cell Vehicles: Hydrogen Infrastructure Costs.....	50
V.F.2	Hydrogen Delivery Infrastructure Options Analysis.....	447
VI.F.2	Analyses of Hydrogen Storage Materials and On-Board Systems.....	671
VII.I.9	Cost Analyses of Fuel Cell Stack/Systems.....	1067
XI.8	Metal Hydride Slurry as a Novel Carrier of Hydrogen (Phase I Project).....	1333

Translume, Inc.

VII.H.2	Fiber Optic Temperature Sensors for PEM Fuel Cells.....	989
---------	---	-----

U.S. Army, Ft. Belvoir

VIII.A.4	Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (General Motors)	1155
----------	---	------

Underwriters Laboratories

IX.2	Hydrogen Codes and Standards.....	1255
------	-----------------------------------	------

United Solar Ovonic Corp.

IV.F.6	Critical Research for Cost-Effective Photoelectrochemical Production of Hydrogen.....	270
--------	---	-----

United Technologies Corporation

VII.B.3	Enabling Commercial PEM Fuel Cells with Breakthrough Lifetime Improvements	761
---------	--	-----

United Technologies Corporation Fuel Cells, Inc.

VII.A.3	Development of High-Temperature Membranes and Improved Cathode Catalysts	739
VII.B.4	Development of a Low-Cost, Durable Membrane and Membrane Electrode Assembly for Stationary and Mobile Fuel Cell Application	767
VII.D.1	Scale-Up of Carbon/Carbon Composite Bipolar Plates	863
VII.G.1	150 KW PEM Fuel Cell Power Plant Verification.....	951
VII.H.5	Development of Sensors for Automotive Fuel Cell Systems	1005
VIII.A.3	Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project (Chevron Technology Ventures)	1151

United Technologies Research Center

IV.C.9	Advanced Water-Gas-Shift Membrane Reactor.....	199
IV.D.2	A Novel Slurry-Based Biomass Reforming Process	209
V.B.1	Reversible Liquid Carriers for an Integrated Production, Storage and Delivery of Hydrogen	425

XVI Project Listings by Organization (Continued)

United Technologies Research Center (Continued)

VI.A.2	High Density Hydrogen Storage System Demonstration Using NaAlH ₄ Based Complex Compound Hydrides.....	467
VI.A.4	Complex Hydride Compounds with Enhanced Hydrogen Storage Capacity.....	479
VII.A.3	Development of High-Temperature Membranes and Improved Cathode Catalysts.....	739
VII.G.1	150 KW PEM Fuel Cell Power Plant Verification.....	951
VII.H.5	Development of Sensors for Automotive Fuel Cell Systems.....	1005

Univeristy of South Florida

VI.G.2	Fuel Cell and Hydrogen Research at the University of South Florida.....	696
--------	---	-----

Universal Oil Products LLC

IV.A.5	Hydrogen Generation from Biomass-Derived Carbohydrates via the Aqueous-Phase Reforming (APR) Process.....	96
--------	---	----

University of Alabama

VI.B.4h	Chemical Hydrogen Storage CoE, University of Alabama.....	566
VIII.A.7	Global Assessment of Hydrogen-Based Technologies.....	1163

University of Alaska Fairbanks

IV.A.11	Ceramic Membrane Reactor Systems for Converting Natural Gas to Hydrogen and Synthesis Gas (ITM Syngas).....	124
---------	---	-----

University of British Columbia

VII.C.8	Development of Transition Metal/Chalcogen Based Cathode Catalysts for PEM Fuel Cells.....	848
---------	---	-----

University of California - Berkeley

IV.E.1	Maximizing Light Utilization Efficiency and Hydrogen Production in Microalgal Cultures.....	211
IV.G.4	High Temperature Heat Exchanger Project.....	306
VI.D.2	A Synergistic Approach to the Development of New Classes of Hydrogen Storage Materials.....	635
X.5	Hydrogen Technology and Energy Curriculum (HyTEC).....	1303

University of California - Davis

III.5	Technical and Economic Studies of Regional Transition Strategies Toward Widespread Use of Hydrogen Energy.....	38
IV.B.5	Hydrogen Production for Fuel Cells via Reforming of Coal-Derived Methanol.....	155
VI.B.4i	Chemical Hydrogen Storage CoE, University of California, Davis.....	568
VII.K.5	Demonstration and Evaluation of Fuel Cell Powered Trailer Refrigeration Units (TRUs).....	1105
VII.K.9	Research and Development for Off-Road Fuel Cell Applications.....	1129

XVI Project Listings by Organization (Continued)

University of California - Irvine

IV.A.1	Autothermal Cyclic Reforming Based Hydrogen Generating and Dispensing System	77
IV.H.7	Hydrogen Generation From Electrolysis	357

University of California - Los Angeles

VI.A.3	Discovery of Novel Complex Metal Hydrides for Hydrogen Storage through Molecular Modeling and Combinatorial Methods	473
VI.B.4j	Chemical Hydrogen Storage CoE, University of California, Los Angeles (UCLA)	570

University of California - Santa Barbara

IV.F.3	Photoelectrochemical Hydrogen Production Using New Combinatorial Chemistry Derived Materials	256
VI.D.6	Hydrogen Storage Materials with Binding Intermediate between Physisorption and Chemisorption	646

University of Central Florida

VI.G.2	Fuel Cell and Hydrogen Research at the University of South Florida	696
X.10	STAC Hydrogen Learning Centers	1319

University of Chicago

IV.E.3	Photobiological H ₂ Production Systems: Creation of Designer Alga for Efficient and Robust Production of H ₂ from Water	225
--------	---	-----

University of Cincinnati

VII.H.4	Development of a Thermal and Water Management System for PEM Fuel Cells	1000
---------	---	------

University of Colorado

IV.I.1	Solar Hydrogen Generation Research	377
IV.I.2	Fundamentals of a Solar-thermal Mn ₂ O ₃ /MnO Thermochemical Cycle to Split Water	389
VIII.B.3	Hydrogen Power Park Business Opportunities Concept Project	1180

University of Connecticut

VI.A.6	Effects and Mechanisms of Mechanical Activation on Hydrogen Sorption/Desorption of Nanoscale Lithium Nitrides	528
VII.A.3	Development of High-Temperature Membranes and Improved Cathode Catalysts	739
VII.B.8	Development of Higher Temperature Membrane and Electrode Assembly for Proton Exchange Membrane Fuel Cell Device	790

University of Florida

VI.G.2	Fuel Cell and Hydrogen Research at the University of South Florida	696
--------	--	-----

University of Hawaii

IV.F.1	High-Efficiency Generation of Hydrogen Using Solar Thermochemical Splitting of Water - UNLV: Photoelectrochemical Hydrogen Production Subtask at UH	243
--------	---	-----

XVI Project Listings by Organization (Continued)

University of Hawaii (Continued)

IV.I.1	Solar Hydrogen Generation Research	377
VI.A.1	Catalytically Enhanced Hydrogen Storage Systems.....	463
VI.A.51	Metal Hydride CoE, University of Hawaii	517
VII.B.4	Development of a Low-Cost, Durable Membrane and Membrane Electrode Assembly for Stationary and Mobile Fuel Cell Application	767

University of Hawaii - Manoa

IV.F.1	High-Efficiency Generation of Hydrogen Using Solar Thermochemical Splitting of Water - UNLV: Photoelectrochemical Hydrogen Production Subtask at UH	243
IV.F.8	Photoelectrochemical Hydrogen Production	274

University of Illinois

V.A.5	Hydrogen Embrittlement of Pipeline Steels: Causes and Remediation.....	421
VII.A.2	Advanced MEAs for Enhanced Operating Conditions.....	730

University of Illinois - Urbana-Champaign

VI.A.5m	Metal Hydride CoE, University of Illinois	518
---------	---	-----

University of Kansas

VII.E.2	Platinum Group Metal Recycling Technology Development	895
---------	---	-----

University of Miami

VII.A.2	Advanced MEAs for Enhanced Operating Conditions.....	730
VII.B.7	MEA and Stack Durability for PEM Fuel Cells	784

University of Michigan

III.13	Analysis of the Hydrogen Production and Delivery Infrastructure as a Complex Adaptive System.....	68
VI.C.1k	Carbon-Based Hydrogen Storage CoE, University of Michigan.....	613
VI.C.11	Carbon-Based Hydrogen Storage CoE, University of Michigan.....	614
VI.D.7	New Concepts for Optimized Hydrogen Storage in Metal-Organic Frameworks	648
VII.F.6	Fuel Processors for PEM Fuel Cells.....	926

University of Minnesota

IV.A.12	Integrated Short Contact Time Hydrogen Generator.....	127
VII.A.2	Advanced MEAs for Enhanced Operating Conditions.....	730

University of Missouri

IV.E.3	Photobiological H ₂ Production Systems: Creation of Designer Alga for Efficient and Robust Production of H ₂ from Water	225
--------	--	-----

University of Missouri - St. Louis

VI.D.4	Hydrogen Storage in Novel Organic Clathrates	641
--------	--	-----

XVI Project Listings by Organization (Continued)

University of Missouri - Rolla

IV.A.3	A Reversible Planar Solid Oxide Fuel-Fed Electrolysis Cell and Solid Oxide Fuel Cell for Hydrogen and Electricity Production Operating on Natural Gas/Biogas	86
--------	--	----

University of Montana

X.4	Hydrogen Futures Park at The University of Montana	1300
-----	--	------

University of Nevada

IV.I.1	Solar Hydrogen Generation Research	377
VIII.A.6	Fuel Cell Powered Front-End Loader Mining Vehicle	1159

University of Nevada - Reno

VI.A.5n	Metal Hydride CoE, University of Nevada, Reno	521
---------	---	-----

University of Nevada - Las Vegas

IV.G.4	High Temperature Heat Exchanger Project	306
IV.H.11	Hydrogen Filling Station FY 2005 Progress Report	370
IV.I.1	Solar Hydrogen Generation Research	377
VI.G.5	Fundamental Research for Optimization of Hydrogen Storage and Utilization	716

University of North Carolina

VI.C.1m	Carbon-Based Hydrogen Storage CoE, University of North Carolina (Chapel Hill)	616
---------	---	-----

University of North Dakota

IV.D.2	A Novel Slurry-Based Biomass Reforming Process	209
--------	--	-----

University of Pennsylvania

IV.A.11	Ceramic Membrane Reactor Systems for Converting Natural Gas to Hydrogen and Synthesis Gas (ITM Syngas)	124
VI.B.4k	Chemical Hydrogen Storage CoE, University of Pennsylvania	573
VI.C.1n	Carbon-Based Hydrogen Storage CoE, University of Pennsylvania	618
VI.C.2	Carbide-Derived Carbons with Tunable Porosity Optimized for Hydrogen Storage	620

University of Pittsburgh

VI.A.5o	Metal Hydride CoE, University of Pittsburgh	525
---------	---	-----

University of South Alabama

VII.G.5	Smart Energy Management and Control for Fuel Cell Based Micro-Grid Connected Neighborhoods	972
---------	--	-----

University of South Carolina

IV.I.3	Low Temperature Electrolytic Hydrogen Production	392
VI.G.1	Clean Energy Research	683

XVI Project Listings by Organization (Continued)

University of South Carolina (Continued)

- VII.B.5 Development of Polybenzimidazole-Based, High-Temperature Membrane and Electrode Assemblies for Stationary Applications771
- VII.C.2 Novel Non-Precious Metal Catalysts for PEMFC: Catalyst Selection through Molecular Modeling and Durability Studies.....816

University of Southern California

- IV.C.6 Hydrogen Production via Commercially Ready Inorganic Membrane Reactor.....190

University of Southern Mississippi

- VII.B.3 Enabling Commercial PEM Fuel Cells with Breakthrough Lifetime Improvements.....761

University of Tennessee

- VIII.D.3 Chattanooga Fuel Cell Demonstration Project1209

University of Toledo

- IV.F.6 Critical Research for Cost-Effective Photoelectrochemical Production of Hydrogen270
- IV.F.10 Production of Hydrogen for Clean and Renewable Sources of Energy for Fuel Cell Vehicles.....278

University of Utah

- VI.A.5p Metal Hydride CoE, University of Utah.....527

University of Virginia

- III.8 Hydrogen Production Infrastructure Options Analysis56

University of Washington

- IV.H.10 Large Area Cell for Hybrid Hydrogen Co-Generation Process.....367
- VI.B.4l Chemical Hydrogen Storage CoE, University of Washington575

University of Western Ontario

- VII.H.8 Graphite-based Thermal Management System Components for Fuel Cell Power Systems.....1019

University of Wisconsin, Madison

- IV.A.5 Hydrogen Generation from Biomass-Derived Carbohydrates via the Aqueous-Phase Reforming (APR) Process96

University of Wyoming

- IV.B.1 The Integration of a Structural Water-Gas-Shift Catalyst with a Vanadium Alloy Hydrogen Transport Device145

UOP

- VI.A.3 Discovery of Novel Complex Metal Hydrides for Hydrogen Storage through Molecular Modeling and Combinatorial Methods.....473

XVI Project Listings by Organization (Continued)

VAIREX Corporation

VII.A.2 Advanced MEAs for Enhanced Operating Conditions.....730

Vehicle Projects LLC

VIII.A.6 Fuel Cell Powered Front-End Loader Mining Vehicle1159

Viewpoint Systems Inc.

VIII.A.4 Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project
(General Motors)1155

Virent Energy Systems, Inc.

IV.A.5 Hydrogen Generation from Biomass-Derived Carbohydrates via the Aqueous-Phase
Reforming (APR) Process96

Virginia Polytechnic Institute

VII.A.3 Development of High-Temperature Membranes and Improved Cathode Catalysts739

VII.E.2 Platinum Group Metal Recycling Technology Development895

X.10 STAC Hydrogen Learning Centers1319

Vista Consulting

IX.2 Hydrogen Codes and Standards.....1255

Volvo Trucks North America

VII.K.6 Solid Oxide Fuel Cell Development for Auxiliary Power in Heavy-Duty Vehicle
Applications.....1110

Washington Safety Management Solutions

VIII.A.6 Fuel Cell Powered Front-End Loader Mining Vehicle1159

World Resources Institute

III.13 Analysis of the Hydrogen Production and Delivery Infrastructure as a Complex
Adaptive System.....68

